U.S. NUCLEAR REGULATORY COMMISSION

DIRECTIVE TRANSMITTAL

TN: DT-95-12

To:	NRC Management Directives Custodians
Subject:	Transmittal of Directive 3.8, "Unclassified Contractor and Grantee Publications in the NUREG Series"
Purpose:	Directive and Handbook 3.8 are being revised in their entirety to update information, to include editorial changes, and to add information about references. Specifically, the directive and handbook are being revised to specify that NRC must obtain prior approval from the Institute of Nuclear Power Operations (INPO) before referencing INPO documents and to explain how to reference proprietary reports.
Office and Division of Origin:	Administration, Freedom of Information and Publications Services
Contact:	Juanita Beeson, 415-7166
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Directive:	3.8 Unclassified Contractor and Grantee Publications in the NUREG Series
Availability:	U.S. Government Printing Office, (202) 512-2409

Unclassified Contractor and Grantee Publications in the NUREG Series

Directive 3.8

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Unclassified Contractor and Grantee Publications in the NUREG Series
Directive 3.8

Policy
(3.8–01)

U.S. Nuclear Regulatory Commission policy requires that the following publications published by NRC adhere to the documentation and production requirements, standards, and practices specified in this directive and handbook: (1) unclassified NRC contractor, consultant, or grantee formal reports, books, and international agreement reports in the NUREG/CR (contractor reports), NUREG/GR (grant reports), and NUREG/IA (international agreement reports) series; (2) reports and books by contractors of the U.S. Department of Energy (DOE); and (3) publications prepared for NRC under memoranda of understanding and interagency agreements.

Objectives
(3.8–02)

- To ensure the production and dissemination of information and publications as required by the Energy Reorganization Act of 1974 and the Freedom of Information Act. (a)
- To ensure technical staff and management reviews of formal reports and books before publication. (b)
- To ensure that national security, patent rights, copyrights, proprietary rights, and rights in other sensitive unclassified information, including those specified in interagency and international agreements and memoranda of understanding, are not compromised by the release or publication of information by NRC. (c)

Objectives
(3.8–02) (continued)

- To ensure that all unclassified NRC contractor or grantee publications in the NUREG series carry the registered Government identification NUREG/CR–0000, NUREG/GR–0000, or NUREG/IA–0000, with the exception of some publications prepared by grantees, and indicate the availability of source material used in these publications. (d)
- To ensure that NRC–sponsored book manuscripts receive proper peer review from experts within and outside NRC. (e)
- To provide uniform procedures for publishing formal reports and books prepared by NRC contractors or grantees. (f)

Organizational Responsibilities and Delegations of Authority
(3.8–03)

Executive Director for Operations (EDO)
(031)

Delegates to the Deputy Executive Directors for Operation decisionmaking authority for the resolution of differences between NRC and contractors about the contents of publications, about granting contractors permission to publish NRC–sponsored information in the open literature, and about permitting contractors to issue press or other media releases concerning NRC–sponsored information.

Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research (DEDR)
(032)

As delegated from the EDO, makes final decisions in the following areas for the Office of Nuclear Reactor Regulation, the Office of Nuclear Regulatory Research, and regional offices:

- When an office director refuses to publish an NRC–sponsored document because of irreconcilable differences between himself or herself and the author about the contents of the document. (a)

Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research (DEDR)
(032) (continued)

- When an office director refuses to permit a contractor's principal investigator to publish NRC–sponsored information in the open literature. (b)
- When an office director refuses to permit a contractor to issue a press or other media release about an NRC–sponsored publication. (c)

Deputy Executive Director for Nuclear Materials Safety, Safeguards, and Operations Support (DEDS)
(033)

As delegated from the EDO, makes final decisions in the following areas for the offices reporting to the DEDS:

- When an office director refuses to publish an NRC–sponsored document because of irreconcilable differences between himself or herself and the author about the contents of the document. (a)
- When an office director refuses to permit a contractor's principal investigator to publish NRC–sponsored information in the open literature. (b)
- When an office director refuses to permit a contractor to issue a press or other media release about an NRC–sponsored publication. (c)

Office Directors
(034)

- Ensure that publications will be reviewed in draft for acceptability before final printing and distribution by determining that they are consistent with agency policy, management decisions, and that they raise no significant legal issues. (a)
- Ensure that statements of work on contracts* include a requirement that contractors comply with this directive and handbook and with Government Printing and Binding Regulations. (b)

*"Contract" in this context encompasses the "Standard Order for DOE Work" (NRC Form 173), interagency and international agreements, and grants.

Office Directors
(034) (continued)

- Sign, or delegate signature authority for, the NRC Form 426A, "Release to Publish Unclassified NRC Contractor, Consultant, or Conference Proceedings Reports" (Exhibit 1 of Handbook 3.8), and for memoranda requesting reprints of contractor publications. (c)

Director, Office of Administration (ADM)
(035)

As delegated from the DEDS, administers NRC's programs and policies for publishing unclassified contractor and grantee reports and books in the NUREG series.

Director, Division of Freedom of Information and Publications Services, (DFIPS), ADM
(036)

- Develops and administers, as delegated from the Director, ADM, NRC's program and policies for publishing unclassified contractor, consultant, and grantee formal reports, books, and international agreement reports in the NUREG/CR, NUREG/GR, and NUREG/IA series. (a)
- Applies the policy, procedures, standards, and guides for the documentation, formatting, composition, printing, and dissemination of NRC-sponsored publications in the NUREG series consistent with the mission of the agency and in accordance with the requirements of the Government Printing and Binding Regulations issued by the Joint Committee on Printing, U.S. Congress. (b)
- Develops and administers the central agency publication numbering system for identifying, producing, and retrieving unclassified NRC-sponsored publications in the NUREG series. (c)

Director, Division of Contracts (DC), ADM
(037)

Ensures that those requests for proposals, invitations for bids, and grant proposals, and the ensuing contracts and grants that require

Director, Division of Contracts (DC), ADM
(037) (continued)

publications as deliverables include provisions requiring that contractors comply with this directive and handbook and with Government Printing and Binding Regulations.

Applicability
(3.8–04)

Employees
(041)

All NRC employees shall follow the policy and guidance specified in this directive and handbook.

Other Publications
(042)

The provisions of this directive and handbook do not apply to NRC staff publications in the NUREG series, NRC docket material, or documents created by NRC boards, panels, advisory committees, or offices that report to the Commission.

Handbook
(3.8–05)

Handbook 3.8 gives detailed guidelines for preparing unclassified contractor and grantee publications in the NUREG series.

References
(3.8–06)

A Manual of Style, University of Chicago Press.

Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.).

"Copyrights," Title 17, *United States Code*.

"Cost Principles for State and Local Governments," OMB Circular A–87, Office of Management and Budget, January 1981.

Energy Reorganization Act of 1974, as amended (42 U.S.C. 5801 et seq.).

References
(3.8–06) (continued)

"Federal Grant and Cooperative Agreement Act," Pub. L. 95–224, February 3, 1978.

"Federal Regulation Requirements," Executive Order 12291, February 17, 1981 (5 U.S.C. 5601 Note).

Freedom of Information Act (5 U.S.C. 552).

Government Printing and Binding Regulations, Pub. L. 101–9, February 1990.

"Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations," OMB Circular A–110, Office of Management and Budget, July 1976.

Memorandum of Understanding Between the Department of Energy and the U.S. Nuclear Regulatory Commission, February 24, 1978.

Memorandum of Agreement Between the Institute of Nuclear Power Operations and the U.S. Nuclear Regulatory Commission, dated September 17, 1993.

NRC Management Directive 3.9, "NRC Staff and Contractor Speeches, Papers, and Journal Articles on Regulatory and Technical Subjects."

— 3.11, "Conferences and Conference Proceedings."

— 12.2, "NRC Classified Information Security Program."

— 12.6, "NRC Sensitive Unclassified Information Security Program."

NUREG–0650, Revision 1, "Publishing Documents in the NUREG Series," November 1990.

NUREG/BR–0075, Revision 2, "NRC Field Policy Manual," Field Policy Manual No. 9, dated March 22, 1993.

"Public Printing and Documents," Title 44, Chapter 3, Government Printing Office, *United States Code*.

U.S. Government Printing Office Style Manual, 1984.

Unclassified Contractor and Grantee Publications in the NUREG Series

Handbook 3.8

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Part I

Introduction

This handbook specifies the procedures that the Nuclear Regulatory Commission (NRC) contractors and grantees need to follow when preparing the following publications for the NRC: (A)

- Final NUREG reports (1)
- International agreement reports (2)
- Books (3)
- Grant publications (4)

The handbook is divided into six major parts and includes a glossary and exhibits. Part II provides general information for staff consideration in preparing statements of work. Parts III, IV, V, and VI provide publishing guidelines specific to, respectively, contractor reports, international agreement reports, books, and grantee publications. (B)

Contractor means a private contractor, consultant, expert, another State or Federal agency working under an interagency agreement, or a Department of Energy (DOE) facility or subcontractor, such as a national laboratory, working under the DOE/NRC Memorandum of Understanding of February 24, 1978, and any subcontractors of these organizations. (C)

This directive and handbook, as well as a copy of "Publishing Documents in the NUREG Series" (NUREG–0650, Revision 1), must be included or referenced in all contracts, interagency and international agreements, and grants for which the publications previously listed are contract deliverables or grant obligations. In addition to the guidelines specific to each type of publication that appear in subsequent parts of this handbook, all statements of work must contain the applicable guidelines outlined in Part II. (D)

Part II

Preparing Publication Requirements for Statements of Work for Contracts

Specifying Publication Requirements (A)

List and describe the type of technical reports required from each project, task, or subtask, as applicable. State when, how many, and to whom the reports should be submitted and the scope of information they should contain. These reports may be unclassified, sensitive unclassified, or classified. For guidelines and requirements covering sensitive unclassified and classified publications, refer to Management Directive (MD) 12.2, "NRC Classified Information Security Program," and MD 12.6, "NRC Sensitive Unclassified Information Security Program." (1)

This directive and handbook pertain to publications that will be issued in the NUREG/CR, NUREG/IA, and NUREG/GR series. (2)

Publishing Formal Reports (B)

NUREG series reports will be printed and distributed by NRC from camera-ready copy submitted by the contractor to the Publications Branch, Mailstop T-6 E7, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. The camera-ready copy is to be prepared in accordance with the provisions of this handbook. Recommended guidelines for the organization and format of formal reports are specified in "Publishing Documents in the NUREG Series" (NUREG-0650, Revision 1). (1)

When the report contains sensitive unclassified or classified information, the contractor must comply with MD 12.2. (2)

Publishing Formal Reports (B) (continued)

If a draft is desired before completing a final report, specify in the statement of work (SOW) the due date for delivering the final camera–ready copy after receiving comments from NRC staff or participants (if applicable) on the draft. State that all draft material be submitted to the cognizant NRC contact. (3)

When the contractor is to submit draft material for comment before preparing the final report, state that the contractor will be asked to make changes if there are comments from NRC staff or participants. If agreement on the changes is reached, the NRC contact will authorize the contractor to prepare the final copy and submit it to the NRC contact if it is a letter report or input to a Safety Evaluation Report or an Environmental Statement, or to the Director, Division of Freedom of Information and Publications Services (DFIPS) if it is a camera–ready copy for printing and distribution. This procedure will ensure proper publication, handling, distribution and, among other things, preclude further changes that might nullify the agreement. (4)

If special caveats were agreed to between the contractor and the NRC contact, the caveats should accompany the NRC Form 426A (Exhibit 1) for approval when it is sent to the NRC contact. A copy of special caveats should also accompany the camera–ready copy sent to DFIPS. (5)

If agreement on changes to a formal technical report to be issued in the NUREG/CR series is not reached, the NRC contact may request the contractor to prepare the camera–ready copy with, in addition to the standard disclaimer required on all contractor formal reports (see Section (F), Part III of this handbook), any caveats deemed necessary to cover NRC objections. These caveats may range from "The views expressed in this report are not necessarily those of the U.S. Nuclear Regulatory Commission" to the addition of a preface setting forth the NRC opinion or footnotes at appropriate locations within the text. (6)

If NRC objections cannot be covered in this manner, NRC can refuse to publish the report. In the case of DOE/national laboratory reports, the DOE Operations Office Manager responsible for the laboratory should be informed by the NRC office director or regional administrator of the decision and the reasons therefor. A copy of the decision should be sent to the laboratory director. In the case of another Federal agency, a State, or a private contractor, the person who entered into the contract should similarly be informed by the

Publishing Formal Reports (B) (continued)

NRC contracting officer. The contractor is then free to publish the report without identifying NRC as the funding sponsor of the report and without the NRC disclaimer. Decisions by the office director or designee may be appealed to the appropriate Deputy Executive Director for Operations. (7)

Publishing Unclassified Information in the Open Literature and Presenting Papers (C)

Specify whether the contractor's principal investigator is permitted to publish in the open literature instead of submitting a final report and/or to present papers at public or association meetings during the course of the work. If this arrangement is authorized, add the following statement to the SOW: (1)

> The principal investigator may publish the results of this work in the open literature instead of submitting a final report or may present papers at public or association meetings at interim stages of the work.

If the NRC contact wants to review the paper or journal article before presentation or submission for publication, so state in the SOW, as follows: (2)

> The principal investigator may publish the results of this work in the open literature instead of submitting a final report or may present papers at public or association meetings at interim stages of the work if the article or paper has been reviewed by the NRC contact in draft form and agreement has been reached on the content.

If agreement is not reached, NRC may also require that the paper include in addition to the standard statement "Work supported by the U.S. Nuclear Regulatory Commission," any caveats deemed necessary to cover NRC objections. If NRC objections cannot be covered in this manner, NRC may refuse to authorize publication in the open literature and/or presentation of papers. (3)

In the latter case, NRC will inform the contractor of the decision, as previously stated. The contractor is then free to publish without identifying NRC as the funding sponsor of the information. Decisions by office directors or designees may be appealed to the appropriate NRC Deputy Executive Director for Operations. (4)

Publishing Unclassified Information in the Open Literature and Presenting Papers (C) (continued)

If the contractor proposes to publish in the open literature or present the information at meetings *in addition* to submitting the required technical reports, approval of the proposed article or presentation should be obtained from NRC. NRC shall approve the material as submitted, approve it subject to NRC–suggested revisions, or disapprove it. In any event, NRC may disapprove or delay presentation of papers on information that is subject to the Commission's approval that has not been ruled upon or that has been disapproved. (5)

If the contractor requests permission to publish in the open literature even though the contract does not explicitly provide for this type of publication, the contract can be modified to provide for such presentations. (6)

When the contractor submits journal articles for publication, each must be accompanied by the following statement: (7)

> The submitted manuscript has been authored by a contractor of the U.S. Government under Contract* No. ____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

All published papers and articles must include the following disclaimer: (8)

> This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use or the results of such use, of any information, apparatus, product, or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights. The views expressed in this paper are not necessarily those of the U.S. Nuclear Regulatory Commission.

*For DOE work orders, the appropriate job code number is applicable.

Publishing Unclassified Information in the Open Literature and Presenting Papers (C) (continued)

If the contractor is requested by the journal or other publisher to transfer the copyright, the contract author will respond to the journal or other publisher in writing in accord with the sample letter shown as follows: (9)

Dear (Copyright Holder's Name):

We recently received a document for signature assigning copyright and republication rights in the submitted article (title) to (name of publication). This letter is offered in lieu of the document as a means of completing the transfer of ownership. Accordingly, we hereby expressly transfer and assign our rights of ownership in the above-cited work to (name of publisher).

You are advised, however, that the above assignment and any publication or republication of the above-cited work is subject to the following Government rights:

The submitted manuscript has been authored by a contractor of the U.S. Government under Contract No. _____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

Sincerely,

If NRC approves open literature publication and page charges and travel costs are required for the presentation of papers, see MD 3.9, "NRC Staff and Contractor Speeches, Papers, and Journal Articles on Regulatory and Technical Subjects." (10)

Reports Containing Sensitive Unclassified and Classified Information (D)

Examples of the proper marking of reports designated Official Use Only, Limited Official Use, Proprietary Information, Safeguards Information, and classified (CONFIDENTIAL, SECRET, and TOP SECRET) are specified in MD 12.2.

Conference and Workshop Proceedings (E)

If NRC approves publication of compilations of papers presented at NRC-sponsored or cosponsored meetings, conferences, and symposia, see MD 3.11, "Conferences and Conference Proceedings."

Distribution of Reports to Contractors (F)

Up to 50 copies of printed unclassified NUREG/CR, NUREG/GR, and NUREG/IA reports will be bulk shipped to the contractor by NRC. (The Joint Committee on Printing's *Government Printing and Binding Regulations* permit contractors to receive free of charge up to 50 copies of reports they have produced for NRC.) If fewer than 50 copies are needed, indicate the desired quantity on NRC Form 426A (Exhibit 1). Contractors requesting single copies for specific individuals in organizations other than the contractor's organization who are not included in the distribution requested by the NRC contact may address such a request, with written justification, to the NRC contact. If the additional distribution is approved by the NRC contact, the contractor shall send address labels with the camera-ready copy to the Publications Branch, DFIPS, USNRC, Washington, DC 20555–0001, and that distribution will be made along with the standard distribution.

Coordinating Contractor Press or Other Media Releases of Information (G)

A contractor may request permission to issue a press or other media release on the work being done. That request must be made to the NRC office director or designee, who will consult with the staff of the Office of Public Affairs. The contractor must not issue a press release on nonroutine information without this prior approval. This approval may be obtained by a telephone call to the office director or designee to expedite the request. The contractor may appeal decisions not to authorize the release of information or delays in handling the request to the appropriate Deputy Executive Director for Operations.

Part III

Draft and Final NUREG Reports

Identification Information (A)

NUREG Number (1)

Each contractor report published by NRC must be identified by a unique alphanumeric designation controlled and maintained by the Division of Freedom of Information and Publications Services (DFIPS). To obtain an NRC report number, call the Publications Branch, DFIPS, at (301) 415-7008. (a)

The NRC identification numbers will have one of the following forms: (b)

- NUREG/CR-0000
- NUREG/GR-0000
- NUREG/IA-0000

CR indicates contractor report, GR indicates grant report, and IA indicates international agreement report. The contractor report number, if any, will be placed below the NUREG number on the title page and cover. (c)

When a report consists of more than one volume or binding, or is issued in more than one edition, an appropriate volume, number, supplement, part, addendum, or revision designation must appear immediately below the NRC report number and the contractor's report number, if any. (d)

Authors' Names (2)

Authors' names must appear on the report cover and title page, unless placing them there is impractical, as for an annual report having many contributors. Editors or compilers with subject-area expertise may also be identified as such on the cover and title page. The authors'

Identification Information (A) (continued)

Authors' Names (2) (continued)

affiliation need not be listed unless it differs from the organization creating the report.

Organizational Identification (3)

The Publications Branch, DFIPS, prepares the covers and title pages for all reports and will list information about the organization that created the report as it is provided.

Previous Reports in Series (4)

If the report being prepared is one in an ongoing series, list all previous reports in the series. Include report numbers and issuance dates. Place this list on the back of the title page. If this list cannot be placed on a single page, place the pages at the end of the front matter rather than on the back of the title page.

Report Dates (5)

The report dates are shown on the title page. These dates include the month and year the report is completed and the month and year it is published.

Report Organization and Components (B)

The organization and components of contractor reports vary, depending on their purpose and scope. Recommended format and organizational guidelines appear in "Publishing Documents in the NUREG Series" (NUREG–0650, Revision 1). (1)

Each draft and final report prepared for NRC must include an abstract of 200 words or less that appears on a separate page preceding the table of contents. The abstract also must appear on the "Bibliographic Data Sheet," NRC Form 335 (Exhibit 2). Instructions for completing NRC Form 335 appear on the back of the form. Guidelines on the special writing requirements for preparing abstracts appear in Section 5.5 of NUREG–0650, Revision 1. (2)

Pre-Publication Reviews (C)

Patent Review (1)

Patent implications must be considered before approval of reports for public release so that disclosure will not adversely affect the patent

Pre-Publication Reviews (C) (continued)

Patent Review (1) (continued)

rights of NRC or the contractor. If the work being reported is contractually managed through another Government agency (e.g., DOE national laboratories), the contractor should request that Government agency to perform the patent review. The result of the review must be reported on NRC Form 426A under item 8 (see Exhibit 1). (a)

If NRC directly administers the contract, or the contractor is unable to obtain a patent clearance from the Government agency administering the contract, the responsible NRC contracting officer must be consulted, and the responsible NRC technical contact shall consider the patent implications. If the report does not require a patent review because the report does not contain any description of novel technical developments that may be of an inventive nature, mark "N/A" on the NRC Form 426A in the space for the Patent Counsel's signature. If a possibility exists that developments of an inventive nature are disclosed, the contracting officer shall request assistance from the NRC Assistant General Counsel for Administration, Office of the General Counsel, on (301) 415–1553. (b)

Security Review (2)

If a report of sensitive unclassified or classified work is required, the NRC contact must work with the NRC Division of Security to establish the appropriate procedures and inform the contractor of these procedures through the contracting officer. The standards for marking and handling these reports are given in Management Directive (MD) 12.2, "NRC Classified Information Security Program."

Copyright Review (3)

Copyrighted material must not appear in NRC–sponsored publications without written permission from the copyright holder. See Section 3.4 of NUREG–0650, Revision 1, for information about obtaining copyright permission.

Color Printing (D)

Regulations issued by the Joint Committee on Printing (JCP) restrict the use of color in printed materials to those uses that are of demonstrable value. JCP regulations specify that "demonstrably valuable multicolor printing" includes the following categories: (1)

Color Printing (D) (continued)

- Maps and technical diagrams for which additional color is necessary for clarity. (a)
- Object identification (medical specimens, diseases, plants, flags, uniforms, etc.). (b)
- Safety programs, fire prevention, savings bonds programs, and competitive areas of personnel recruiting. (c)
- Areas wherein clearly identifiable savings in costs can be soundly predicated on multicolor use. (d)
- Printing for programs required by law, whose relative success or failure is in direct ratio to the degree of public response, and for which that response can be logically attributable to the number of colors planned and the manner in which they are proposed to be used. (e)
- Color for promotional or motivational purposes, such as programs concerning public health, safety, and consumer benefits, or to encourage utilization of Government facilities, such as programs for Social Security, Medicare, and certain areas of need for veterans. (f)

The regulations indicate that the following categories do not meet the "demonstrable value" criteria: (2)

- Printed items wherein additional color is used primarily for decorative effect. (a)
- Printed items for which additional color is used primarily in lieu of effective layout and design. (b)
- Printed items for which additional color is used excessively, that is, four colors when two or three will fulfill the need, three colors when two are adequate, two colors when one is adequate. (c)
- Printed items wherein the inclusion of multicolor does not reflect careful, competent advance planning that recognizes the contribution that the use of color is expected to make to the ultimate end–purpose. (d)

Color Printing (D) (continued)

If color printing is anticipated when the statement of work or standard order for DOE work is being prepared, contact the Publications Branch, DFIPS. Prior approval must be granted by the Director of DFIPS. If a requirement for color printing arises as the report is being prepared, submit a written justification for its use to the Director of DFIPS. (3)

Microfiche (E)

NRC contractors and DOE laboratories submitting microfiche with reports must submit a hard copy of each microfiche, include headers on each microfiche as shown in Exhibit 3, and conform to the following NRC specifications.*

- Microfiche must conform to either the 24/98 format for source documents with 14 columns and 7 rows (reduction ratio of 1 to 24) or the 48/270 format for computer output microfilm with 18 columns and 15 rows (reduction ratio of 1 to 48). (1)
- The microfiche sheet must be standard 105 mm by 148 mm. (2)
- The microfiche must be either a silver–halide master or a black or blue–black diazo placed in acid–free envelopes. (3)
- The microfiche must contain headers as shown in the sample in Exhibit 3. Specifically, the first block of the header must contain the NUREG number (include volume or revision, if applicable), the contractor identification number, and the classification (e.g., unclassified, proprietary). The second block must contain the description of the microfiche and may include the contractor's name. The third block must contain the publication date and the sheet identification. (4)
- The header information must be eye readable on a clear background. (5)
- A foldout page must be microfilmed in sections if the page is too large to be microfilmed in a double frame. No less than 25–mm overlap of original material is acceptable. (6)

*With the exception of items (3), (4), and (8), these specifications are consistent with the American National Standards Institute "Standard for Micrographics-Microfiche, ANSI/AIIM MS5-1985." Copies of this standard are available from the American National Standards Institute, ATTN: Sales Department, 11 West 42nd Street, 13th floor, New York, NY 10036 (212) 642-4900, or from the Association for Information and Image Management, ATTN: Publications Section, 1100 Wayne Avenue, Silver Spring, MD 20910 (301) 587-8202.

Microfiche (E) (continued)

- The first frame must be blank (on the first sheet only), and the second frame must contain the National Institute of Standards and Technology's (NIST's) Reference Material resolution target in Microcopy Test Charts (NBS SRM 1010A). (7)
- Jacketed microfiche is unacceptable. (8)

Disclaimers (F)

The following notice will be added by the Publications Branch, DFIPS, before the printing process on the inside front cover: (1)

> This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product, or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights.

The branch will print the additional statement, "The views expressed in this report are not necessarily those of the U.S. Nuclear Regulatory Commission," below the standard disclaimer, if appropriate. Other qualifying statements may be added, if needed. (2)

Availability Information (G)

Reference Material (1)

Reports or other documents referenced in text, reference sections, bibliographies, and appendixes of unclassified regulatory and technical reports in the NUREG series must be available to the public either in the public domain (as in a public library, at the Government Printing Office (GPO), at the National Technical Information Service (NTIS), or at other reference or sales outlets) or in the NRC Public Document Room (PDR). This means that references should not be made to personal communications and interviews, unpublished information and information with restricted distribution (e.g., proprietary, National Security, and Official Use Only). If the unretrievable information is important and unrestricted, quote it in

Availability Information (G) (continued)

Reference Material (1) (continued)

the text or in footnotes. Provide any credit due to individuals in the text or in an acknowledgment section. Availability may be stated collectively for all entries. (a)

Although proprietary reports may not be included in a list of references, listing or identification of proprietary reports may be included in an appendix or in a separate listing following the reference section titled "Proprietary Sources of Information." (b)

In addition, reference to Institute of Nuclear Power Operations (INPO) documents may not be made without prior approval from INPO. Approval to reference INPO documents must be stated on the NRC Form 426A. (c)

Guidelines for developing and presenting reference material are provided in NUREG–0650, Revision 1. (d)

Reports (2)

Most final reports are sold by GPO and NTIS. A statement indicating this availability is added to each report, as appropriate, by the Publications Branch staff before the report is printed. (a)

Draft reports for which comments are requested are typically announced in the *Federal Register* as being available from the NRC. These reports are not sold at GPO or at NTIS. (b)

Forms (H)

Bibliographic Data Sheet (NRC Form 335) (1)

All published NRC reports must include an NRC Form 335 as the final right–hand page of the manuscript. Instructions for completing the NRC Form 335 appear on the back of the form. A completed NRC Form 335 must be submitted to the Technical Publications Section, DFIPS, with the camera-ready copy of the report. Exhibit 2 shows a completed NRC Form 335.

Release To Publish Unclassified NRC Contractor, Consultant, or Conference Proceedings Reports (NRC Form 426A) (2)

The NRC contact must submit a completed NRC Form 426A (see Exhibit 1) with the camera–ready copy of the report to the Technical Publications Section, DFIPS. NRC Form 426A must be signed by the staff member designated by the appropriate office director.

Printing and Reprinting (I)

The Publications Branch, DFIPS, will review the camera-ready report submitted for printing for its adherence to the standards and requirements set forth in this directive and handbook, as well as any relevant guidelines from NUREG-0650, Revision 1. Unsatisfactory manuscripts will be returned to the NRC contractor for appropriate action. (1)

Submit a memorandum requesting a reprint to the Director, DFIPS, or designee, for approval. Include with the request a written justification and the approval of the office director or designee for reprinting. Also provide address labels for recipients not on NRC standard distribution lists. (2)

Distribution (J)

The Publications Branch, DFIPS, will arrange distribution for all copies of unclassified formal contractor reports in accordance with instructions on NRC Form 426A (Exhibit 1). The Publications Branch will also arrange automatic distribution of these reports to NRC NUDOCS, the NRC PDR, NTIS, GPO, and the GPO Federal Depository Library Program. (1)

Sensitive unclassified and classified reports will be distributed by the NRC sponsoring office on a case-by-case basis. (2)

Part IV

International Agreement Reports

Background and Rationale (A)

NRC has cooperative nuclear safety research programs that involve either or both foreign governments and organizations and U.S. industry. These programs include monetary contributions, information exchange, and comments on program plans and results as authorized in the Energy Reorganization Act of 1974. To this end, international and U.S. industry agreements have been signed that provide for transmitting unclassified technical information from foreign participants to NRC. These procedures apply only to NRC–managed work. (1)

The interests of all NRC international nuclear safety research program participants are served best by formal dissemination of information on these programs or codes developed for or in cooperation with NRC. (2)

Identification Information (B)

Cover and Title Page (1)

The cover and title page will contain a title, a subtitle (if appropriate), the names of the authors, the performing organization, and the NRC office sponsoring the project. The cover and title page will be prepared by the Publications Branch, Division of Freedom of Information and Publications Services (DFIPS).

NRC Report Number (2)

Each report must be identified by an NRC–controlled alphanumeric number as the prime number unique to that report. The centralized document control system for unique identification is maintained by DFIPS. Numbers may be obtained by calling the Publications Branch at (301) 415–7008. (a)

Identification Information (B) (continued)

NRC Report Number (2) (continued)

The NRC identification number will have the form "NUREG/IA–000," where IA indicates "international agreement." The foreign participant's report number, if any, may be inserted below the NUREG number on the cover, if desired. (b)

When a report consists of more than one volume or binding or is issued in more than one edition, include an appropriate volume, number, supplement, part, addendum, or revision designation below the report number and the foreign participant's report number, if any. (c)

Previous Reports in Series (3)

If the report being prepared is one in an ongoing series, list all previous reports in the series. Include report numbers and issuance dates. Place this list on the back of the title page. If this list cannot be placed on a single page, place the pages at the end of the front matter rather than on the back of the title page.

Report Organization and Components (C)

The organization and components of cooperative agreement reports vary somewhat, depending on their purpose and scope. Each of these reports must include an abstract of 200 words or less that appears on a separate page before the table of contents. The abstract must also appear on the "Bibliographic Data Sheet," NRC Form 335 (Exhibit 2). Instructions for completing NRC Form 335 appear on the back of the form (Exhibit 2). Guidance on the special writing requirements for preparing abstracts appears in Section 5.5 of NUREG–0650, Revision 1.

Availability Information (D)

References and Bibliographies (1)

Reports or other documents referenced in text, reference sections, bibliographies, and appendixes of unclassified regulatory and technical reports in the NUREG series must be available to the public either in the public domain (as in a public library, at the Government Printing Office (GPO), at the National Technical Information Service (NTIS), or at other reference or sales outlets) or in the NRC Public Document Room. This means that references should not be made to personal communications, interviews, and unpublished information with restricted distribution (e.g., proprietary, National Security, Official Use Only). If the unretrievable information is important and

Availability Information (D) (continued)

References and Bibliographies (1) (continued)

unrestricted, it can be quoted in the text, in footnotes, or in appendixes. If the title of a document containing proprietary information is unclassified, it can also be quoted in the text or in a footnote. If credit is due to individuals, they can be mentioned in the text or in an acknowledgment section. Availability may be stated collectively for all entries. (a)

Although proprietary reports may not be included in a list of references, listing or identification of proprietary reports may be included in an appendix or in a separate listing following the reference section titled "Proprietary Sources of Information." (b)

In addition, reference to Institute of Nuclear Power Operations (INPO) documents may not be made without prior approval from INPO. Approval to reference INPO documents must be stated on the NRC Form 426A. (c)

Guidelines for developing and presenting reference material are provided in NUREG–0650, Revision 1. (d)

Reports (2)

These reports will be made available for sale by GPO and NTIS.

Disclaimer (E)

The following notice will be added by the Publications Branch, DFIPS, on the inside front cover before printing.

NOTICE

This report was prepared under an international cooperative agreement for the exchange of technical information. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product, or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights.

Forms (F)

Bibliographic Data Sheet (NRC Form 335) (1)

Submit a typed NRC Form 335 (Exhibit 2) with the camera-ready copy to the Technical Publications Section, DFIPS, as the final right-hand page.

Release to Publish Unclassified NRC Contractor, Consultant, or Conference Proceedings Reports (NRC Form 426A) (2)

An NRC Form 426A (Exhibit 1) must be completed and signed by the office director or designee and submitted with the camera-ready copy of the report to the Technical Publications Section, DFIPS.

Classified or Sensitive Unclassified Information (G)

The NRC contact should refer to Management Directive 12.2 or call the Division of Security for answers to questions about the status of classified or sensitive unclassified information in NUREG/IA reports.

Part V
Books

General (A)

These guidelines apply to books written by contractors and grantees that are printed by NRC. See Part VI of this handbook for guidance on publications, including books, by grantees.

Definition (B)

A book refers to a publication intended as a permanent reference or as a textbook or major critical review of a technical or regulatory topic.

Format (C)

Books are usually 6 by 9 inches in trim size, but size will be based on requirements such as ease of use and legibility for graphics, foldouts, and the like. The binding (casebound or paperback) will be chosen according to the need for durability. Additional guidance on manuscript preparations can be found in the *U.S. Government Printing Office Style Manual* and the Chicago University's *A Manual of Style*. Refer also to NRC's "Publishing Documents in the NUREG Series" (NUREG–0650, Revision 1). (1)

The contractor shall submit to the NRC project manager the typeset (photocomposed) manuscript suitable for printing. The NRC contact shall submit the manuscript to the Chief, Publications Branch, Division of Freedom of Information and Publications Services, (DFIPS), where it will be reviewed for adherence to the standards set forth and referenced in this directive and handbook. The manuscript will also be reviewed for printing acceptability by the Printing and Mail Services Branch, DFIPS. Unsatisfactory manuscripts will be reported to the NRC contact for appropriate contractual action by the NRC contracting officer or, in the case of Government agency or interagency agreement work, the publications manager of the performing organization. (2)

Format (C) (continued)

DFIPS will approve the design of the cover and title page containing appropriate information concerning—(3)

- Authors' names (a)
- Organizational identification (b)
- Public availability and sales (c)

All books must include a comprehensive subject index of the book's contents, unless the book is made up almost exclusively of graphical or tabular matter. See NUREG-0650, or *The Chicago Manual Style* (13th ed.) for guidelines on creating an index. (4)

NRC Document Number (D)

Each book must be identified by an NRC-controlled alphanumeric code unique to that book. The alphanumeric code will have the form NUREG/CR for books prepared by contractors and NUREG/GR for books prepared by grantees. (1)

When a book consists of more than one volume or binding, or is issued in more than one edition, include an appropriate volume, number, supplement, part, addendum, or revision designation directly below the document number. (2)

Numbers are assigned by the Publications Branch, DFIPS. The number may be obtained before the manuscript is submitted to DFIPS for printing by calling the Publications Branch at (301) 415-7166. The DFIPS staff will arrange to meet with the NRC contact for the project and, when appropriate, the author(s), to discuss the publication production requirements and the schedule for the book. (3)

Availability of Reference Materials (E)

The guidelines for availability of reference material given in Section G of Part III of this handbook also apply to books prepared by contractors and grantees that are published by NRC.

Reviews (F)

Peer (1)

Books published by NRC must undergo peer review by experts within and outside NRC. Peer review refers to a critical evaluation of the technical contents of a publication. These reviews may be conducted anonymously by reviewers from the author's own or a related field who are totally independent of the work leading to the manuscript. (a)

Reviewers should be chosen by the NRC office sponsoring the book from the potential audience for the publication and should provide an independent judgment about whether the publication successfully accomplishes the author's aims. Peer reviewers should be chosen for their expertise in the subject matter of the book. They may come from academia, the national laboratories, other Federal agencies, or from other research institutes or consulting firms. They may be identified from the membership rolls of professional societies, American National Standards Institute (ANSI) subcommittees, and the like. Do not choose more than one reviewer from the same organization. (b)

When assessing potential peer reviewers, screen for demonstrated competence and achievement in a specific discipline or research specialty. Assess competence based on the quality of research accomplished, publications in refereed journals, and other significant technical activities, achievements, and honors. Consider the judgment, perspective, and objectivity of reviewers. Consider also the personal integrity of those selected to ensure the confidentiality of information reviewed. Finally, avoid real or perceived conflicts of interest. Do not choose reviewers who are licensees or consultants to licensees, nor reviewers from intervenor groups. Likewise, do not choose reviewers who may profit financially from influencing the information reviewed. (c)

The services of reviewers from outside the agency may be acquired through consultant services contracts. The decision as to whether to reimburse peer reviewers should be made on a case-by-case basis, however. Recognize that reimbursing peer reviewers may give the appearance of a conflict of interest, suggesting to some that because NRC is paying for this service, the agency will seek only reviewers thought to be favorably disposed to the material reviewed. One way to offset this impression is to seek recommendations for peer reviewers from independent organizations, such as the American Physics

Reviews (F) (continued)

Peer (1) (continued)

Society, the American Nuclear Society, the American Society of Mechanical Engineers, or appropriate universities. Reimbursement could then be made to the organization. (d)

Copyright (2)

Copyrighted material must not be reproduced in NRC books without appropriate authority, usually written permission of the copyright holder. See Section 3.4 of NUREG–0650, Revision 1, for information about obtaining copyright permission.

Security (3)

On the basis of the knowledge of the information sources used, the author is responsible for ensuring that the manuscript does not contain classified or other access–controlled information. If uncertainty exists with respect to the security classification of a reference document or manuscript, an authorized classifier or the NRC Division of Security should be contacted for assistance. See also Management Directive 12.2, "NRC Classified Information Security Program."

Patent (4)

The patent review guidelines for draft and final formal reports specified in Section (C)(1) of Part III of this handbook also apply to books prepared by contractors and grantees.

Publishing Authorization Form (G)

A completed NRC Form 426A (Exhibit 1), signed by the office director or designee or by a DOE national laboratory authorized official if the publication is prepared for the Office of Nuclear Regulatory Research, must be submitted to DFIPS with the book manuscript.

Disclaimers (H)

The following standard U.S. Government notice will be added before printing: (1)

Disclaimers (H) (continued)

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product, or process disclosed in this document, or represents that its use by such third party would not infringe privately owned rights.

The following additional statement may be printed below the standard disclaimer, if authorized by the NRC office director or designee: (2)

This document was prepared under U.S. Nuclear Regulatory Commission (NRC) Contract No._____. The opinions, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the NRC.

Other qualifying statements may be added, if needed. (3)

Printing (I)

DFIPS will submit book manuscripts to GPO for printing. The printing cycle requires from 6 to 8 weeks.

Distribution and Sales (J)

The DFIPS staff will arrange distribution in accordance with distribution guidance provided by the NRC project manager on NRC Form 426A (Exhibit 1). (1)

Free distribution should be limited to those who contributed materially to the book or to those for whom the book's subject matter bears directly on their work at or for NRC. (2)

DFIPS will arrange to make the book available for sale through GPO. DFIPS also will arrange to have it made available at the NRC PDR and for the GPO Federal Depository Library Program. (3)

Part VI

Grant Publications

Background and Rationale (A)

The Nuclear Regulatory Commission funds grants for educational and nonprofit institutions, State and local governments, and professional societies for the expansion, exchange, and transfer of knowledge and ideas pursuant to the Atomic Energy Act of 1954, as amended, Sections 31.a and 141.b.

Publication of Results (B)

The grant will specify the publication requirements of the award. Grant results may be published by NRC, by the grantee, or in the open literature.

Publication by NRC (1)

This publication option must be governed by the guidelines specified in Part III of this handbook for reports or in Part V of this handbook for books, as appropriate. See "Identification Information," Section (C) of this part.

Publication by a Grantee (2)

When the grant specifies that the grantee is to publish the results of his or her work, the grantee must grant to the Government a royalty–free, nonexclusive, irrevocable license to reproduce, translate, publish, use, and dispose of all copyrightable material first produced or composed in the grantee's performance under the grant.

Publication by a Grantee in the Open Literature (3)

When the grantee submits journal articles for publication, each article must be accompanied by the following statement: (a)

Publication of Results (B) (continued)

Publication by a Grantee in the Open Literature (3) (continued)

> The submitted manuscript has been authored by a grantee of the U.S. Government under Grant No._____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

All open literature publications prepared under this grant must contain the following statement: (b)

> This paper was prepared with the support of the U.S. Nuclear Regulatory Commission (NRC) under Grant No._____. The opinions, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the NRC.

If the grantee is requested by the journal or other publisher to transfer the copyright, the grantee author will respond to the journal or other publisher in writing in accord with the sample letter shown as follows: (c)

> Dear (Publisher's Name):
>
> We recently received a document for signature assigning copyright and republication rights in the submitted article (title) to (name of publication). This letter is offered in lieu of the document as a means of completing the transfer of ownership. Accordingly, we hereby expressly transfer and assign our rights of ownership in the above-cited work to (name of publisher).
>
> You are advised, however, that the above assignment and any publication or republication of the above-cited work is subject to the following Government rights:
>
> The submitted manuscript has been authored by a grantee of the U.S. Government under Grant No. _____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.
>
> Sincerely,

Publication of Results (B) (continued)

Reprints of Open Literature Publications (4)

When any article resulting from work under the grant is published in a scientific, technical, or professional journal, two reprints of the publication must be sent to the cognizant NRC program officer, clearly labeled with the grant number and other appropriate identifying information.

Identification Information (C)

Each report or book published by NRC that results from a grant must be identified by an alphanumeric number, "NUREG/GR–000," where "GR" indicates "grant report." (1)

When the publication consists of more than one volume, number, supplement, part, or binding, or is issued in more than one edition, an appropriate volume, supplement, part, or revision designation must appear below the NUREG/GR number. (2)

Numbers may be obtained from the Publications Branch at (301) 415–7008. (3)

Pre-Publication Reviews (D)

The U.S. Congress characterizes the relationship between a Federal agency and a grant recipient as one in which "the recipient can expect to run the project without agency collaboration, participation, or intervention as long as it is run in accordance with the terms of the instrument."

Glossary*

Book. A publication intended as a permanent reference or textbook or as a major critical review of a technical or regulatory topic. It may be *casebound* (hardback) or paperbound.

Camera-Ready Copy. Pages ready for printing by the offset printing process. This is a colloquial term used even though the printing process may not involve the so-called copy camera (see also *reproducible masters*).

Casebound. Term denoting a book with a hard cover.

Compose. To arrange letters, in type or film, for printing. Usually synonymous with *typesetting*.

Composition. The process of setting type by hot-metal casting, phototypesetting, or electronic character generating devices (e.g., computers) for the purpose of producing *camera-ready copy*, negatives, a plate, or an image to be used in the production of *printing* or microform.

Contractor Report. Record of work done (a report) prepared in accordance with the provisions of a contract or under or pursuant to an interagency agreement.

Copyright. A form of protection provided by the laws of the United States (Title 17, U.S. Code), to the authors of "original works of authorship," including literary, dramatic, musical, artistic, and certain other intellectual works. This protection is available to both published and unpublished works. Generally, copyrighted material may not be reproduced without the permission of the author or the publisher.

Disseminate. To announce the publication of reports and make them available for free distribution, sale, or copying.

*Words in *italics* in definitions are also defined in the glossary.

Glossary (continued)

Distribution. Reports dispensed to specific organizations and individuals to ensure their participation in the regulatory process and support of research and technological investigations. Such distribution may be accomplished by the use of standard distribution lists established and maintained by the Division of Freedom of Information and Publications Services at the request of the originating office or region.

Documentation. Classification and associated markings required for classified or sensitive unclassified documents, the NRC report number unique to the report, title (and subtitle, if any), author or correspondent (if any), organization identification and contract number (or job code number), date, and availability.

Edition. All copies of a book printed from the same type. Edition also refers to format, such as *paperback*, *casebound*, or to the text, as revised, expanded, and so on. If extensive revisions have been made to the text and the book is reprinted, the revised version is the new edition.

Grant. A legal instrument which defines the relationship between the Government and a recipient for the transfer of money, property, services, or anything of value to the recipient for the accomplishment of a public purpose of support or stimulation authorized by law. A grant presumes a limited amount of involvement by the agency in the performance by the recipient.

Grant Report. A record of work done prepared in accordance with the provisions of the *grant*.

Index. An alphabetical list of all major topics discussed in a *book*. It cites the page numbers where each topic can be found. The index is the last section of a book.

International Agreement. Cooperative nuclear safety research programs that involve either or both foreign governments and organizations and U.S. industry. Such involvement, authorized under 42 U.S.C. 5801, includes monetary contributions, information exchanges, and comments on program plans and results.

International Agreement Report. A record of work done prepared in accordance with the provisions of an *international agreement*.

Glossary (continued)

Manuscript. A handwritten, typewritten, or *composed* version of a document, as distinguished from a printed copy.

NRC Project Manager. The NRC staff member responsible for the work performed by consultants or contractors and their subcontractors, or for work performed under or pursuant to an interagency agreement.

Paperback. A *book* with a flexible paper cover.

Peer Review. A critical evaluation of the technical contents of a publication. These reviews are conducted by reviewers from the author's own or a related field who are totally independent of the work leading to the *manuscript*. Reviewers should be chosen from the potential audience for the publication and should provide an independent judgment about whether the publication successfully accomplishes the author's aims.

Photocomposition. *Typesetting* performed when photosensitive paper or film is exposed to light in the form of letters and characters. Photocomposition is to be distinguished from hot-metal and typewriter *composition*.

Printing. As defined by the Joint Committee on Printing, includes and applies to the process of *composition*, platemaking, presswork, collating, and microform; the equipment used in such processes; or the end product produced by such processes and equipment.

Proprietary Information. Trade secrets; privileged or confidential research, development, commercial, or financial information exempt from mandatory disclosure under 10 CFR Part 2 (Sections 2.740 and 2.790) and under 10 CFR Part 9 (Section 9.17); and other information submitted in confidence to the NRC by a foreign source and determined to be unclassified by the NRC.

Public Domain. Materials for which a *copyright* never existed, such as U.S. Government publications, or for which a copyright has expired.

Publicly Available Documents. Information (reports and references) that is available in the NRC Public Document Room (PDR) for public inspection and copying or available in the *public domain*.

Glossary (continued)

Reproducible Masters. *Camera-ready copy* that includes (1) originals of line drawings (or prints that can be copied); (2) glossy prints of black and white photographs; (3) original *typeset* or printed text, tables, cover, title page, contents, and abstract; or (4) other forms of the materials that a printer can reproduce.

Trim Size. The final size of the whole page, margins included.

Typesetting. The placement of type on a page (letters, numbers, and other characters) in conformance with specific style and layout instructions.

Unique Identification. NRC identification (NUREG number) used on a report and its attachments, revisions, and supplements that is not used on any other publication.

Exhibit 1
NRC Form 426A, "Release to Publish Unclassified NRC Contractor, Consultant, or Conference Proceedings Reports"

NRC FORM 426A (3-89) NRCM 1102, 3202

U.S. NUCLEAR REGULATORY COMMISSION

RELEASE TO PUBLISH UNCLASSIFIED NRC CONTRACTOR, CONSULTANT, OR CONFERENCE PROCEEDINGS REPORTS

(Please Type or Print)

1. REPORT NUMBER (If any): NUREG/CR-5627 BNL-NUREG-52257

Obtain from NRC Technical Publications Section on 492-7253

2. TITLE AND SUBTITLE (State in full as shown on document): Alternate Modal Combination Methods in Response Spectrum Analysis

3. FIN OR GRANT NUMBER (Do not use DOE contract number): A-3955

4. AUTHORS (If more than three, name first author followed by "and others"): P. Bezler and others

5. CONTRACTOR: Brookhaven National Laboratory, Department of Nuclear Energy

MAILING ADDRESS (Number and Street, City, State and ZIP Code): Building 129, Upton, NY 11973

TELEPHONE NUMBER: 666-2447

6. TYPE OF DOCUMENT (Check appropriate box)

[X] A. TECHNICAL REPORT
[X] FORMAL [ ] LETTER REPORT

B. CONFERENCE PAPER (If so, complete items (1), (2), and (3) below)
(1) TITLE OF CONFERENCE PAPER:
(2) DATE(S) OF CONFERENCE:
(3) LOCATION OF CONFERENCE:

C. OTHER (Indicate type of item)

7. DISTRIBUTION (List NRC distribution code. Provide mailing labels for special distribution not covered by NRC codes. If NRC staff, provide name and mail stop only. If external, provide complete mailing address.)

RA

50 copies: Judy Liu, Technical Information Division, Bldg. 477B, Brookhaven National Laboratory, Upton, NY 11973

10 copies: Nilesh Chokshi, RES, NLS-217

8. CERTIFICATION (ANSWER ALL QUESTIONS)

YES	NO	
X		A. REFERENCE AVAILABILITY – Is all material referenced in this report available to the public either through a public library, the Government Printing Office, the National Technical Information Service, or the NRC Public Document Room? If no, list the specific availability of a referenced document with the reference listing below.
		SPECIFIC AVAILABILITY
	X	B. COPYRIGHTED MATERIAL – Does this report contain copyrighted material? If yes, attach a letter of release from the source that owns the copyright.
	X	C. COMPUTER CODES – Does this report provide a computer code? If yes, does it comply with the standards in NRC Manual Chapter 0904, "Planning and Control of Automatic Data Processing (ADP) Systems"?
	X	D. PATENT CLEARANCE – Does this report require patent clearance? If yes, the NRC Patent Counsel must signify clearance by signing below.
		NRC PATENT COUNSEL (Type or Print Name) / SIGNATURE / DATE
	X	E. INFORMATION REQUESTS – Does this report contain any questionnaires, surveys, or data collection requests?
	X	F. LICENSING REQUIREMENTS – Does this report impose requirements on licensees?

9. AUTHORIZATION

A. DOE LAB AUTHORIZING OFFICIAL (If applicable) (Type or print name): R.A. Bari — SIGNATURE: R A Bari — DATE: 9/25/90

B. NRC RESPONSIBLE STAFF MEMBER (Type or print name): A. Murphy — SIGNATURE: Andrea J. Murphy — OFF/DIV: 442-3860 — TELEPHONE: NLS217A — MAIL STOP: — DATE: 10/10/90

NRC FORM 426A (3-89)

Exhibit 2
NRC Form 335, "Bibliographic Data Sheet"

NRC FORM 335 (2-89) — U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET
(See instructions on the reverse)

1. REPORT NUMBER (Assigned by NRC, Add Vol., Supp., Rev., and Addendum Numbers, if any.)
NUREG/CR-5603
EGG-2607

2. TITLE AND SUBTITLE
Pressure-Dependent Fragilities for Piping Components: Pilot Study on Davis-Besse Nuclear Power Station

3. DATE REPORT PUBLISHED
MONTH: October — YEAR: 1990

4. FIN OR GRANT NUMBER
B5699

5. AUTHOR(S)
D.A. Wesley, T.R. Kipp, D.K. Nakaki, H. Hadidi-Tamjed

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)
The capacities of four, low-pressure fluid systems to withstand pressures and temperatures above the design levels were established for the Davis-Besse Nuclear Power Station. The results will be used in evaluating the probability of plant damage from Interfacing System Loss of Coolant Accidents (ISLOCA) as part of the probabilistic risk assessment of the Davis-Besse nuclear power station undertaken by EG&G Idaho, Inc. Included in this evaluation are the tanks, heat exchangers, filters, pumps, valves, and flanged connections for each system. The probabilities of failure, as a function of internal pressure, are evaluated as well as the variabilities associated with them. Leak rates or leak areas are estimated for the controlling modes of failure. The pressure capacities for the pipes and vessels are evaluated using limit-state analyses for the various failure modes considered. The capacities are dependent on several factors, including the material properties, modeling assumptions, and the postulated failure criteria. The failure modes for gasketed-flange connections, valves, and pumps do not lend themselves to evaluation by conventional structural mechanics techniques and evaluation must rely primarily on the results from ongoing gasket research test programs and available vendor information and test data.

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)
pressure-dependent fragilities
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14. SECURITY CLASSIFICATION
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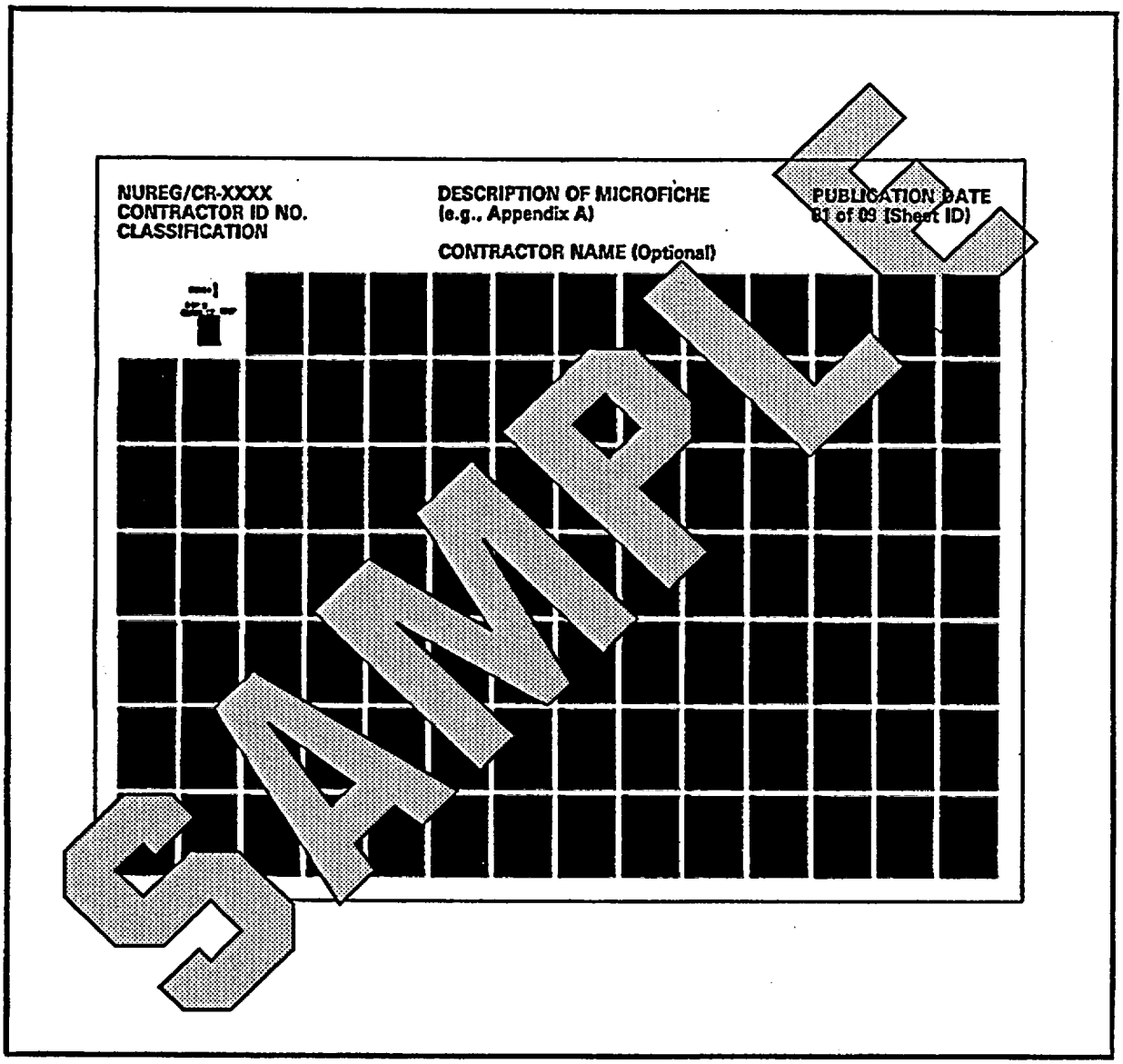

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